

Application Serial No. 10/578,149
Docket No. 7862-88107

IN THE CLAIMS:

The following listing of claims replaces all prior listings of claims in the present application:

Listing of Claims:

1. Cancelled
2. (Currently Amended) The cylindrical separator as claimed in claim [[1]] 17, wherein said cylindrical body [[being]] is made from a plurality of sheets placed onto one another and wound together without any binder.
3. (Original) The cylindrical separator as claimed in claim 2, wherein said sheets comprise at least one layer of a semi-permeable membrane and cellophane in addition to said non-woven sheet material.
4. (Currently Amended) The cylindrical separator as claimed in claim [[1]] 17, wherein said turns being are not affixed to each other by any binder material.
5. (Currently Amended) The cylindrical separator as claimed in claim [[1]] 17, comprising a thermoplastic sealant arranged at the central zone on the outside outer surface of said bottom part.
6. Cancelled
7. (Withdrawn) A method for making the cylindrical separator closed at the bottom as claimed in claim 1, for batteries with a hollow cylindrical interior, comprising the steps of:
 - providing a sheet separator material of predetermined length and width, wherein the width being at least as long as the length of the cylindrical

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- portion of the separator plus and extended portion being at least as long as the half diameter of the separator;
- winding said sheet material around a mandrel by rotating said mandrel, wherein said mandrel extending till the end of said cylindrical portion of the separator and having a head portion at the lower end shaped to define the required profile of said closed bottom part;
 - supporting the outside of the winding by means of a stationary winding nest;
 - applying a predetermined amount of water to said extended portion during any of the foregoing steps to soften said sheet material at the extended portion;
 - guiding said rotating mandrel and separator when placed in said winding nest above a stationary rail provided with a forming groove with varying profile so that said extending portion is engaged in said groove that has a profile conforming to that of said head portion to gradually fold said wetted extended portion from the edge towards the central zone and to close thereby the bottom part of said separator;
 - causing said mandrel and said separator to stop rotation;
 - drying and fusing said wet closed bottom part by the application of heat and a predetermined pressure; and
 - introducing said separator into the cylindrical cavity of a semi-finished cell from said winding nest by pushing said closed bottom portion of the separator by means of axial movement of said mandrel; and
 - withdrawing said mandrel from the interior of said separator.

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8. (Withdrawn) The method as claimed in claim 7, wherein at least two sheet materials placed on one another being wound during said winding step.

9. (Withdrawn) The method as claimed in claim 7, wherein said water application step being carried out prior to said winding step.

10. (Withdrawn) The method as claimed in claim 8, wherein the second sheet being a semi-permeable membrane.

11. (Withdrawn) The method as claimed in claim 7, further comprising the step of slightly pressing said rotating separator on said mandrel from the outside by a belt moved with the required peripheral speed of the rotating separator through the whole period of rotation.

12. (Withdrawn) The method as claimed in claim 7, wherein said drying and fusing step being carried out by a heated die shaped to the required profile of said separator bottom portion.

13. (Withdrawn) The method as claimed in claim 7, further comprising the step of applying a thermoplastic sealant of predetermined volume on the central zone of said bottom portion following said drying and fusing step and prior to said introduction step.

14. (Withdrawn) The method as claimed in claim 7, wherein said mandrel comprising a sleeve and a pin therein, said head portion being provided on said pin, and said sleeve defining a recess for receiving said head portion.

15. (Withdrawn) The method as claimed in claim 14, wherein during said withdrawing step said sleeve being withdrawn first followed by withdrawal of said pin.

16. (Withdrawn) The method as claimed in claim 7, wherein all of said steps being synchronized with a cell manufacturing line.

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17. (New) A cylindrical separator for cylindrical cells, comprising a cylindrical body constituted by a layered structure of a plurality of turns of at least a non-woven sheet material, and a bottom part closing a first end of said cylindrical body, wherein said bottom part is formed by an extension of said cylindrical body, and with the wound layers of said bottom part being fused by heat, and wherein said bottom part has a slightly curved shape with respective wrinkle-free, continuous inner and outer surfaces and a substantially uniform thickness.

18. (New) The cylindrical separator as claimed in claim 17, wherein the bottom part has a slightly outwardly curved shape.

19. (New) The cylindrical separator as claimed in claim 17, wherein said separator bottom part provides an electrical insulation with regard to a cylindrical cell in which it is inserted without a need for any additional disc-shaped insulating element close to the inner surface of said bottom part.